26. Calvet D, Touzé E, Oppenheim C, Turc G, Meder JF, Mas JL. DWI lesions and TIA etiology improve the prediction of stroke after TIA. Stroke 2009;40:187-92.
27. National Institute for Health and Clinical Excellence. Diagnosis and initial management of acute stroke and transient ischaemic attack (TIA). Available at: http://guidance.nice.org.uk/CG68. Accessed June 2011.
28. Easton JD, Saver JL, Albers GW, Alberts MJ, Chaturvedi S, Feldmann E, et al. Definition and evaluation of transient ischemic attack: a scientific statement for healthcare professionals from the American Heart Association/American Stroke Association Stroke Council; Council on Cardiovascular Surgery and Anesthesia; Council on Cardiovascular Radiology and Intervention; Council on Cardiovascular Nursing; and the Interdisciplinary Council on Peripheral Vascular Disease. The American Academy of Neurology affirms the value of this statement as an educational tool for neurologists. Stroke 2009;40:2276-93.
29. Wong AA, Davis JP, Schluter PJ, Henderson RD, O'Sullivan JD, Read SJ. The effect of admission physiological variables on 30 day outcome after stroke. J Clin Neurosci 2005;12:905-10.
30. Rothwell PM, Slattery J, Warlow CP. A systematic review of the risks of stroke and death due to endarterectomy for symptomatic carotid stenosis. Stroke 1996;27:260-5.
31. Golledge J, Cuming R, Beattie DK, Davies AH, Greenhalgh RM. Influence of patient-related variables on the outcome of carotid endarterectomy. J Vasc Surg 1996;24:120-6.
32. Peiper C, Nowack J, Ktenidis K, Hopstein S, Keresztury G, Horsch S. Prophylactic urgent revascularization of the internal carotid artery in the symptomatic patient. VASA 2001;30:247-51.
33. Naylor AR. Invited commentary [on Capoccia L, Sbarigia E, Speziale F, Toni D, Fiorani P. Urgent carotid endarterectomy to prevent recurrence and improve neurologic outcome in mild-to-moderate acute neurologic events. J Vasc Surg 2011;53:622-8]. J Vasc Surg 2011;53:628.

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INVITED COMMENTARY

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The article by Capoccia et al addresses a critical question in the treatment of carotid-related stroke. Appropriate timing of endarterectomy after an ischemic stroke or transient ischemic attack has not been conclusively established. In the past, endarterectomy has been delayed to avoid the devastating complications of hemorrhage and edema into the pre-existent infarct, thereby extending the stroke.

A waiting period of 6 to 12 weeks has been advocated in the past to decrease the incidence of reperfusion injury or hemorrhage into the area of the ischemic tissue. However, it has been recognized that most recurrent strokes occur shortly after the initial event, thereby decreasing the window for beneficial intervention to actually reduce the risk of a second more disabling stroke.[1]

Reperfusion injury has been minimized as knowledge about the pathogenesis of ischemic stroke has increased. Unfortunately, the landmark prospective trials regarding carotid endarterectomy, the North American Symptomatic Carotid Endarterectomy Trial and the European Carotid Surgery Trial, do not shed light on this issue, enrolling patients up to 6 months after presentation without commenting on timing of the intervention in regard to initial symptoms.

Therefore, attempts such as those made by the authors are important to maximize the benefit of endarterectomy to reduce stroke. Guidelines from the American Heart Association and American Stroke Association support rapid intervention after the development of ischemic symptoms.[2] Citing level B evidence, the most recent guidelines state that "benefit from surgery was greatest in men >75 years of age and randomized within 2 weeks after their last ischemic event; benefit fell rapidly with increasing delay." The guidelines note that recurrent stroke is most frequent within the first several weeks after symptoms and that delay beyond that period returns patients to a baseline level of risk. However, the issue remains controversial. Experiences, such as those reported by Rockman et al,[3] have noted an increased rate of perioperative complications for patients undergoing endarterectomy ≤4 weeks of symptoms compared with those treated in a more delayed fashion.

The current article emphasizes an important point: When stroke is treated in an organized stroke center with a protocol for evaluation by neurology and vascular surgery, good results can be obtained with rapid intervention. Such collaboration leads to proper patient selection and is critical to obtain results that further refine the benefit of carotid endarterectomy for stroke prevention.

REFERENCES

1. Rothwell PM, Eliasziw M, Gutnikov SA, Warlow CP, Barnett HJ, Carotid Endarterectomy Trialists Collaboration. Endarterectomy for symptomatic carotid stenosis in relation to clinical subgroups and timing of surgery. Lancet 2004;363:915-24.
2. Furie KL, Kasner SE, Adams RJ, Albers GW, Bush RL, Fagan SC, et al. Guidelines for the prevention of stroke in patients with stroke or transient ischemic attack: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. Stroke 2011;42:227-76.
3. Rockman CB, Maldonado TS, Jacobowitz GR, Cayne NS, Gagne PJ, Riles TS. Early carotid endarterectomy in symptomatic patients is associated with poorer perioperative outcomes. J Vasc Surg 2006;44:480-7.